COMPLETE SET OF PENDING CLAIMS

1. (Original) A cleaning system for cleaning boxes used for moving and storing semiconductor wafers, comprising:

an enclosure;

a rotor rotatably supported within the enclosure, with the rotor having box positions for holding a box;

a plurality of spray manifolds positioned to spray a cleaning or rinsing fluid towards the rotor, with at least one of the spray manifolds having a plurality of straight spray nozzles, and also having at least one angle spray nozzle.

2. (Cancelled)

3. (Previously Presented) The cleaning system of claim 10 where the angle is from 30-60 degrees.

4-5. (Cancelled)

6. (Currently Amended) A method for cleaning five sided boxes used for carrying and storing semiconductor wafers, comprising the steps of:

placing the boxes in or on a rotor with an open side of the box facing radially outwardly and away from a center of the rotor;

spinning the rotor holding the boxes;

spraying a first spray of a cleaning liquid towards the center or spin axis of the rotor to clean the boxes on the rotor; and

spraying a second spray of the cleaning liquid at an angle relative to the first spray to clean the boxes on the rotor.

7-8. (Cancelled)

9. (Previously Presented) The method of claim 6 where the center axis of the first spray is aimed at the center of the rotor, and the centerline of the second spray is aimed at an angle to the first spray, so that the second spray sprays a pattern of liquid in a direction towards or opposite to the spin direction of the rotor.

10. (Previously Presented) A cleaning system for cleaning boxes used for moving and storing semiconductor wafers, comprising:

an enclosure;

a rotor rotatably supported within the enclosure, with the rotor having box positions for holding a box;

a plurality of spray manifolds positioned to spray a cleaning or rinsing fluid towards the rotor, with at least one of the spray manifolds having a plurality of straight spray nozzles, and also having at least one angle spray nozzle, wherein the straight spray nozzles spray in a pattern having a horizontal central axis, and the angle spray nozzle sprays in a pattern having a central axis extending upwardly or downwardly at an angle relative to the horizontal central axis.

11. (Previously Presented) A cleaning system for cleaning boxes used for moving and storing semiconductor wafers, comprising:

an enclosure;

a rotor rotatably supported within the enclosure, with the rotor having box positions for holding a box;

a plurality of spray manifolds positioned to spray a cleaning or rinsing fluid towards the rotor, with at least one of the spray manifolds having a plurality of straight spray nozzles, and also having at least one angle spray nozzle, wherein the angle spray nozzle is oriented to spray in a pattern having a central axis directed opposite to the direction of rotation of the rotor.

12. (Previously Presented) A cleaning system for cleaning boxes used for moving and storing semiconductor wafers, comprising:

an enclosure;

a rotor rotatably supported within the enclosure, with the rotor having box positions for holding a box;

a plurality of spray manifolds positioned to spray a cleaning or rinsing fluid towards the rotor, with at least one of the spray manifolds having a plurality of straight spray nozzles and two angle nozzles separated by at least two straight spray nozzles.

13. (Currently Amended) A method for cleaning five sided boxes used for carrying and storing semiconductor wafers, comprising the steps of:

placing the boxes in or on a rotor with an open side of the box facing radially outwardly and away from a center of the rotor;

spinning the rotor holding the boxes;

spraying a first spray of a cleaning liquid towards the center or spin axis of the rotor to clean the boxes on the rotor; and

spraying a second spray of the cleaning liquid at an angle relative to the first spray to clean the boxes on the rotor;

where the first spray is sprayed in a pattern having a centerline or center axis which is horizontal, and where the second spray is also sprayed in a pattern having a centerline which is horizontal.

14. (Currently Amended) A method for cleaning five sided boxes used for carrying and storing semiconductor wafers, comprising the steps of:

placing the boxes in or on a rotor with an open side of the box facing radially outwardly and away from a center of the rotor;

spinning the rotor holding the boxes;

spraying a first spray of a cleaning liquid towards the center or spin axis of the rotor to clean the boxes on the rotor; and

spraying a second spray of the cleaning liquid at an angle relative to the first spray to clean the boxes on the rotor, with the first spray oriented horizontally and the second spray oriented upwardly or downwardly at an angle relative to the first spray.

15. (Previously Presented) A cleaning system for cleaning boxes used for moving and storing semiconductor wafers, comprising:

an enclosure;

a rotor rotatably supported within the enclosure, with the rotor having box positions for holding a box;

a plurality of spray manifolds positioned to spray a cleaning or rinsing fluid towards the rotor, with at least one of the spray manifolds having one or more first spray nozzles, and also having one or more second spray nozzles, with the second spray nozzles at an angle of 10-80 degrees to the first spray nozzles.

16. (Currently Amended) A method for cleaning boxes used for carrying and storing semiconductor wafers, comprising the steps of:

placing the boxes in or on a rotor;

spinning the rotor holding the boxes;

spraying a first spray of a liquid from a first set of nozzles on a manifold in a first direction towards the boxes to clean the boxes; and

spraying a second spray of the liquid from a second set of nozzles on the manifold in a second direction different from the first direction to clean the boxes.

17-20. (Cancelled)

21. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure for holding boxes radially about a spin axis of the rotor;

a plurality of spray manifolds positioned to spray fluid towards the rotor, wherein at least one of the spray manifolds includes one or more angle spray nozzles directed to spray fluid toward at least one of a leading interior side surface and a trailing interior side surface of a box on the rotor.

22. (Previously Presented) The cleaning system of claim 21 wherein the at least one spray manifold includes a plurality of angle spray nozzles, with each of the angle spray nozzles oriented at the same angle.

23. (Previously Presented) The cleaning system of claim 21 wherein the at least one spray manifold includes at least two angle spray nozzles oriented at different angles.

24. (Previously Presented) The cleaning system of claim 21 wherein the angle spray nozzle is oriented to spray fluid in a pattern having a central axis extending upwardly or downwardly relative to a horizontal axis.

25. (Previously Presented) The cleaning system of claim 21 wherein the angle spray nozzle is oriented to spray fluid in a pattern having a central axis directed opposite to a direction of rotation of the rotor.

26. (Previously Presented) The cleaning system of claim 21 wherein at least one of the spray manifolds includes a straight spray nozzle.

27. (Previously Presented) The cleaning system of claim 21 wherein the at least one spray manifold has two or more straight spray nozzles between two angle spray nozzles.

28. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure, with the rotor having a plurality of box holder assemblies for holding boxes; and

spray means for spraying a cleaning or rinsing fluid towards the rotor, with the spray means including an angle spray nozzle directed to spray fluid toward or away from a direction of rotation of the rotor.

29. (Cancelled)

30. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure, for holding boxes;

a plurality of spray nozzles positioned to spray fluid towards the rotor, with at least one of the spray nozzles comprising an angle spray nozzle directed to spray fluid toward an up facing surface or a down facing surface of a box on the rotor.

31. (Cancelled)

32. (Previously Presented) The cleaning system of claim 30 wherein the boxes are held in the rotor at positions spaced apart from a spin axis of the rotor, so that the boxes revolve around the spin axis.

33. (Previously Presented) The cleaning system of claim 30 wherein the angle spray nozzle is oriented to spray fluid in a pattern having a central axis directed opposite to a direction of rotation of the rotor.

34. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure, with the rotor having a box position for holding a box; and

spray means for spraying a cleaning or rinsing fluid towards the rotor, with the spray means including an angle spray nozzle and a straight spray nozzle.

35. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure, for holding boxes;

a plurality of spray nozzles positioned to spray fluid towards the rotor, with at least one of the spray nozzles comprising an angle spray nozzle, and at least one of the spray nozzles comprising a straight spray nozzle.

36. (Cancelled)

37. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

an enclosure;

a rotor within the enclosure, for holding boxes;

a plurality of spray nozzles positioned to spray fluid towards the rotor, with at least one of the spray nozzles comprising an angle spray nozzle directed to spray fluid toward at least one of an upper section and a lower section of the rotor.

38. (Previously Presented) The cleaning system of claim 37 wherein at least one of the spray nozzles comprises a second angle spray nozzle directed to spray fluid toward or away from a spin direction of the rotor.

39. (Previously Presented) The cleaning system of claim 28 wherein the angle spray nozzle is directed to spray fluid toward an interior corner of a box held on the rotor.

40. (Previously Presented) The cleaning system of claim 21 wherein at least one of the angle spray nozzles is directed to spray fluid toward the leading interior side surface of the box, and at least one of the angle spray nozzles is directed to spray fluid toward the trailing interior side surface of the box.

41. (Previously Presented) A cleaning system for cleaning boxes used for holding wafers, comprising:

a rotor having a box position for holding a box; and

one or more first spray nozzles, and one or more second spray nozzles, for spraying a fluid towards the rotor, and with at least one of the first spray nozzles at an angle of 10-80 degrees to one of the second spray nozzles.